

201-16027



Richard Denison  
<[rdenison@environmentaldefense.org](mailto:rdenison@environmentaldefense.org)>

09/06/2005 03:05 PM

To NCIC OPPT@EPA, ChemRTK HPV@EPA, Rtk Chem@EPA,  
NCIC HPV@EPA, Karen Boswell/DC/USEPA/US@EPA,  
[donald\\_a\\_lederer@huntsman.com](mailto:donald_a_lederer@huntsman.com)  
MTC@mchsi.com, Karen Florini  
cc <[KFlorini@environmentaldefense.org](mailto:KFlorini@environmentaldefense.org)>, Richard Denison  
<[rdenison@environmentaldefense.org](mailto:rdenison@environmentaldefense.org)>

bcc

Subject Environmental Defense comments on Ethylene  
Carbonate (CAS# 96-49-1)

2005 SEP 12 AM 10:45

RECEIVED  
OPPT CDIC

(Submitted via Internet 9/6/05 to [oppt.ncic@epa.gov](mailto:oppt.ncic@epa.gov), [hvp.chemrtk@epa.gov](mailto:hvp.chemrtk@epa.gov),  
[boswell.karen@epa.gov](mailto:boswell.karen@epa.gov), [chem.rtk@epa.gov](mailto:chem.rtk@epa.gov), [MTC@mchsi.com](mailto:MTC@mchsi.com), and  
[donald\\_a\\_lederer@huntsman.com](mailto:donald_a_lederer@huntsman.com))

Environmental Defense appreciates this opportunity to submit comments on the robust  
summary/test plan for **Ethylene Carbonate (CAS# 96-49-1)**.

Huntsman Petrochemical Corp., in response to EPA's High Production Volume (HPV) Chemical Challenge, has submitted robust summaries and a test plan describing available data and proposed additional testing for ethylene carbonate. As described in the brief test plan, ethylene carbonate is widely used in applications that could result in both human and environmental exposure. However, data describing its fate in the environment as well as its ecotoxicity and toxicity to animals are limited and poorly summarized in the test plan. Rather, the test plan consists of general statements supported by few or no data and no references to the literature. In most cases the test plan only briefly describes limited data and concludes that "data are available and no further testing is needed" without providing any of the data or references to data.

We believe that in some cases the data required to address the necessary SIDS elements are inadequate or unavailable. For example, data cited for ecotoxicity were developed for ethylene glycol, which may or may not be an appropriate surrogate chemical. The test plan argues that additional studies are not necessary because ethylene carbonate is metabolized to ethylene glycol, and data for the latter chemical can be bridged to address these SIDS elements for ethylene carbonate. We would point out that while ethylene carbonate has been shown to be metabolized to ethylene glycol by rats, no evidence is provided to indicate that similar metabolism of ethylene carbonate occurs in fish, plants or Daphnia. Therefore, each of the elements for ecotoxicity should be addressed by additional studies. Also, all references to ethylene carbonate metabolism address the fate of the ethylene portion of the molecule. No evidence is provided to address the fate of the carbonyl portion of the molecule. Whereas we consider it most probable that, upon hydrolysis to form ethylene glycol, this portion of the molecule is transformed directly into CO<sub>2</sub>, evidence that this actually occurs has not been provided. If this portion of the molecule is transformed into formate, then the risk to human health would be greatly enhanced, given that humans are the most sensitive species with respect to formate toxicity. Because rodents are largely insensitive to formate toxicity, human health risks associated with chemicals metabolized to formate are not accurately predicted by toxicity studies using rodents, as is the case for the studies provided here for ethylene carbonate. Therefore, additional studies should be conducted to determine the fate of the carbonyl carbon of ethylene carbonate in mammals.

Additional notes and comments:

1. It is not obvious why the test plan proposes a determination of stability in water (the only study proposed in the test plan), when data in the robust summary, section 3.1.2, indicate that ethylene carbonate is stable in water at 100°C.
2. Neither the test plan nor the robust summaries provide the structural formula of ethylene carbonate.
3. The robust summaries contain many headings that are not supported by data and thus serve only to increase the volume rather than the substance of this submission.

In summary, this submission should not be considered complete or adequate until the fate of the carbonyl carbon of ethylene carbonate is confirmed by additional metabolism studies and additional ecotoxicity studies are conducted to address those SIDS elements.

Thank you for this opportunity to comment.

**Hazel B. Matthews, Ph.D.**  
**Consulting Toxicologist, Environmental Defense**

**Richard Denison, Ph.D.**  
**Senior Scientist, Environmental Defense**